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- 7 -

Remarks

This application has been reviewed in light of the Final Office Action of June 26, 2006. Claims 1-15 and 17-21 are pending, and all claims are rejected. In response, the following remarks are submitted. Reconsideration of this application, as amended, is requested.

Ground 1. Claims 1, 3, 5-11, and 18-21 are rejected under 35 USC 103 over Pan US Patent 6,459,844 in view of Schwanz US Patent 4,227,426. Applicant traverses this ground of rejection.

Pan teaches a conventional leadscrew assembly having a follower with a nut 30.

Schwanz discloses a device wherein a motor 5 has a mechanism in which a spring clip 7 (having arms 8 and 9) is placed over and engaged to the hollow output shaft 6 of the motor 5. The spring clip 7 engages a helical coil 3 of wire (wound onto a flexible wire 2) that extends through the center of the hollow output shaft 6. As the hollow output shaft 6 turns, "...the arm 8 projecting into engagement with the coils 3 pushes or pulls the wire 1 through the hollow shaft 6, depending upon the direction of rotation of the motor 5." (col. 2, lines 34-36).

Contrary to the assertion of the Final Office Action at page 21, line 20, this mechanism of Schwanz is not a screw assembly or a leadscrew, but instead is a device for pushing or pulling the drive wire 1 along its length without rotating the drive wire 1. See also the Abstract and claim 1 of Schwanz, both of which recite "A device for driving a flexible wire having a helical coil therearound along its length..." The wire coil 3 and drive wire 1 do not rotate relative to the longitudinal axis of the wire 1, which would be the result if the drive wire 1 were acting as a leadscrew. The Final Office Action at page 2, line 20 mischaracterizes the device of Schwanz as a "screw assembly", but Schwanz never calls it that and does not use the term "screw" at all. Schwanz's device is a "device for longitudinal displacement of a flexible drive wire", see title of

- 8 -

Schwanz. To call the device of Schwanz a "screw mechanism" is both contrary to Schwanz's own usage and an attempt to give a misimpression that the device of Schwanz acts in the manner of a leadscrew.

Schwanz is therefore nonanalogous art. Stated alternatively, Schwanz is not within the scope and content of the prior art that may be used in forming a sec. 103 rejection. To be analogous art and properly used in forming a sec. 103 rejection, a reference must be concerned with the same problem as another reference and the claims which are being addressed. See, for example, Medtronic, Inc. v. Cardiac Pacemaker, Inc., 220 USPQ 97, 104 (Fed. Cir. 1983), stating: "Faced with a rate-limiting problem, one of ordinary skill in the art would look to the solutions of others faced with rate-limiting problems."

In the present case, the inventor was concerned with a problem in improving the performance of leadscrew assemblies. The first sentence in the Summary of the Invention begins: "The present invention provides a leadscrew assembly..." Every pending claim recites a "leadscrew assembly". In a leadscrew assembly, the leadscrew is rotationally driven. Consistent with the common usage in the art and as stated in para. [0010] of the present application, "The assembly typically further includes a motor that rotationally drives the leadscrew...". See also the present claim 9. Although the explanation of the rejection initially asserts that "Schwanz...discloses a leadscrew assembly...", that is not the case. Schwanz does not disclose or teach a leadscrew assembly, wherein the leadscrew is rotationally driven. In fact, Schwanz emphasizes that its drive wire 1 is not rotated. Schwanz states at col. 2, lines 37-38, "In order to assure that the wire 1 is actually displaced longitudinally, and not simply rotated..." and goes on to describe the restraining structure that assures that the wire 1 is not rotated. Schwanz is therefore not properly applied in rejecting the present claims.

The Final Office Action replies at page 5, lines 6-14 and characterizes the field of the present invention as "screw/nut interaction". That is not the subject of either Pan or the present invention. The present invention is concerned with a leadscrew assembly, not with "screw/nut interactions". Neither the present Specification nor either of the Pan and Schwanz characterize their fields of endeavor as "screw/nut interactions".

- 9 -

In any event, Schwanz does not deal with "screw/nut interaction". There is no "screw" in Schwanz. The wire 1 and its coil 3 do not turn in the manner of a screw.

Even if Schwanz is improperly applied in an attempt to reject the present claims, no prima facie case of obviousness is accomplished. MPEP 2142, under ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS, provides: "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. [citations omitted]. See MPEP para 2143-2143.03 for decisions pertinent to each of these criteria."

The first requirement of MPEP 2142 is that "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings"

The present rejection is a sec. 103 combination rejection. It is well established that a proper sec. 103 combination rejection requires more than just finding teachings in the references of the elements recited in the claim (but which was not done here). To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2143 and 2143.01. See also, for example, In re Fine, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed.Cir. 1988), In re Laskowski, 10 USPQ2d 1397, 1398 (Fed.Cir. 1989), W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 311-313 (Fed. Cir., 1983), and Ex parte Levengood, 28 USPQ2d 1300 (Board of Appeals and

- 10 -

Interferences, 1993); Ex parte Chicago Rawhide Manufacturing Co., 223 USPQ 351 (Board of Appeals 1984). As stated in In re Fine at 5 USPQ2d 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown in order to extract specific teachings from the individual references:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

* * * * *

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680,

- 11 -

16 USPQ2d 1430 (Fed. Cir. 1990)."

* * * * *

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd.Pat.App.& Inter. 1993)."

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art or which can be established by a declaration, not one that can be developed in light of the present disclosure. If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference. Applicant cannot find any such objective basis, because of the completely different types of mechanisms taught by the two references.

The Final Office Action (page 3, lines 13-16) sets forth two asserted advantages of Schwanz that are utterly inappropriate as a basis for combining the teachings of the two references. The first asserted advantage is that set forth at col. 1, line 44-47 of Schwanz, "The device according to the present construction is simple in construction, and is a relatively inexpensive arrangement for translating the rotary motion of the motor to the longitudinal drive motion of the wire." The element of Pan that is driven by the motor 21, specifically the lead screw 24 does not move longitudinally—it moves rotationally. Thus, the advantage set forth in Schwanz does not achieve the desired mechanical movement. The second asserted advantage of

- 12 -

Schwanz is overload protection and is set forth at col. 1, lines 53-58 is described in terms of Schwanz's device--an overload on the linearly driven drive wire 1, not between a rotating screw and a nut as argued by the Final Office Action. In any event, there is no indication that overload protection is a problem for a leadscrew, and there is no indication in either Pan or Schwanz that such a linear-drive overload device of Schwanz could be applied to a leadscrew. The argument of the Final Office Action is straightforward hindsight. If the Courts and the MPEP had meant that the requirement for an objective basis could be met simply by listing an unrelated advantage disclosed by one of the references, they would have said so. Instead they mandated that there be an objective basis to combine the teachings, and the arguments presented in the explanation of the rejection do not meet this requirement.

This attempted combination of teachings does not meet the first requirement of MPEP 2142.

The second requirement of MPEP 2142 is that there must be a reasonable expectation of success the teachings of the references. There is no expectation of success in the combination of Pan and Schwanz for two reasons. First, MPEP 2143.01 provides that, in constructing a sec. 103 rejection, the proposed modification cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference. MPEP 2143.02 requires that, in combining the teachings of two references, there must be a reasonable expectation of success in the combination. Both of these mandates would be violated in the proposed approach of combining the teachings of Pan and Schwanz. Pan deals with a leadscrew assembly, wherein the leadscrew is rotationally driven. Schwanz does not deal with a leadscrew assembly, and in Schwanz the drive wire 1 is not rotationally driven. Schwanz states at col. 2, lines 37-38, "In order to assure that the wire 1 is actually displaced longitudinally, and not simply rotated..." and goes on to describe the structure that ensures that the wire 1 is not rotated. The structures of Pan and Schwanz are mechanically incompatible--Pan selects its structure in order to achieve rotation, and Schwanz selects its structure to prevent rotation. The attempt to modify the approach of Pan with that of Schwanz, as suggested in the explanation of the rejection, would render the approach of Pan inoperable, would

- 13 -

change the principle of operation, and would not be expected to be operable in the manner discussed by Pan.

The Response to Arguments in the paragraph bridging pages 5-6 of the Final Office Action repeats the two asserted advantages discussed above, and asserts that In re McLaughlin is the controlling case authority. The Examiner argues (Final Office Action, page 5, lines 15-21 that "...any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See In re McLaughlin, 170 USPQ 209 (CCPA 1971)."

When first enunciated about 35 years ago, the position of In re McLaughlin might have been subject to differing interpretations. Those seeking support for rejecting patent applications could argue that the quoted language means that no motivation to combine teachings need be found in the prior art, and those seeking to gain allowance would argue to the contrary.

After In re McLaughlin was propounded, its legal principles were later explained and clarified by the Court of Appeals for the Federal Circuit, the successor to the CCPA. As stated in In re Fine, 5 USPQ2d 1596, 1599 (Fed.Cir. 1988):

Obviousness is tested by 'what the combined teachings of the references would have suggested to those of ordinary skill in the art.' In re Keller, 208 USPQ 871, 881 (CCPA 1981). But it 'cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. ACS Hosp. Sys. [cite omitted]. And 'teachings of references can be combined only if there is some suggestion or incentive to do so.' Id. Here, the prior art contains none." [emphasis in original]

The language quoted by the Federal Circuit, 'what the combined teachings of the

- 14 -

references would have suggested to those of ordinary skill in the art,' is virtually word-for-word that relied on by the Examiner from In re McLaughlin, except that it is quoted from a 1981 decision that sets forth the same language and principles, In re Keller.

The Federal Circuit then goes on to explain that "teachings of references can be combined only if there is some suggestion or incentive to do so. Here, the prior art contains none." [First emphasis in original, second emphasis added.] The Federal Circuit has thus held that the prior art itself must contain some suggestion or incentive to combine the teachings of the references, by way of clarifying the interpretation of cases like In re McLaughlin and In re Keller.

In re Fine also states at 5 USPQ 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

The phrase "objective teaching in the prior art" means a teaching that meets an objective standard of its presence. It cannot be satisfied simply by a subjective argument as to what those in the art might do. Subjective arguments can be developed in hindsight based upon the pending application. There must be an "objective teaching" found in the art. Alternatively, knowledge generally available can be used, if properly submitted in an evidentiary fashion. The requirement also cannot be met simply by listing advantages asserted by one of the references, when those advantages have absolutely nothing to do with the other reference(s) or with the claimed invention. If that were the case, the MPEP and the courts would have simply said that the requirements for combining the teachings of the references may be met by listing some advantages of one of the inventions. That is not the language of the MPEP or the decisions.

Lest it be thought that In re Fine is an aberration, a few years earlier the Federal

- 15 -

Circuit in W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303 (Fed. Cir., 1983) emphasized that

"To imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." 220 USPQ 303, 312-313

Elaborating on this point, the Federal Circuit stated:

"The result is that the claims were used as a frame, and individual, naked parts of separate prior art references were employed as a mosaic to recreate a facsimile of the claimed invention. At no point did the district court, nor does Garlock, explain why that mosaic would have been obvious to one skilled in the art in 1969, or what there was in the prior art that would have caused those skilled in the art to disregard the teachings there found against making just such a mosaic." 220 USPQ 303, 312.

The arguments advanced to support this requirement were in fact drawn entirely from the present claims, because the explanation of the rejection chose to ignore the teachings of Schwanz that produced a linear drive from a rotary motion, and instead to adopt only the teachings of Pan that produced a rotary drive from a rotary motion.

This attempted combination of teachings does not meet the second requirement of MPEP 2142.

The third requirement of MPEP 2142 is that the prior art reference (or references when properly combined) must teach or suggest all the claim limitations. Elaborating on this point, the following principle of law applies to all sec. 103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all

- 16 -

claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

Claim 1 recites in part:

a leadscrew operable to rotate about a rotational axis to linearly drive a driven structure...; and
a hollow drive nut housing affixed to the driven structure and comprising
a nut bore..., and
a spring pin affixed to the drive nut housing and spanning across the nut bore to engage the leadscrew thread."

Claim 20 has a similar recitation.

The spring clip 7 taught by Schwanz is not affixed to anything comparable to the recited drive nut housing. In fact the spring clip 7 of Schwanz is not part of the driven structure, which is the drive wire 1, and instead is part of the driving motor 5 and its hollow shaft 6, as clearly depicted in Figure 1 and discussed at col. 2, line 39.

Claim 1 further recites in part:

"a leadscrew operable to rotate about a rotational axis...comprising
an elongated shaft..., and
a leadscrew thread comprising a thread wire helically

- 17 -

wrapped in spaced-apart turns upon the lateral surface and affixed to the elongated shaft".

Claim 20 has a similar recitation.

Neither reference has any such teaching of a leadscrew that rotates about a rotational axis, where the leadscrew thread is a helically wrapped thread wire. Pan discloses a leadscrew but not a helically wrapped thread wire. Schwanz does not disclose any threaded structure like a leadscrew that rotates about a rotational axis.

This attempted combination of teachings does not meet the third requirement of MPEP 2142.

The Final Office Action does not address this third requirement at all, or seek to controvert Applicant's position.

Ground 2. Claims 1, 2, 4, 12-15, and 17 are rejected under 35 USC 103 over Pan US Patent 6,459,844 in view of Schwanz US Patent 4,227,426, and further in view of Devenyi US Patent 5,636,549. Applicant traverses this ground of rejection.

The combination of Pan and Schwanz does not teach the limitations of claim 1 for the reasons stated earlier in relation to the Ground 1 rejection. Claim 12 has similar recitations to those of claim 1 as discussed in relevant part in relation to the Ground 1 rejection, and the combination of references does not teach these limitations for the same reasons discussed in relation to the Ground 1 rejection, which discussion is incorporated here. Devenyi '549 adds nothing in this regard.

The considerations discussed in relation to the Ground 1 rejection are equally applicable here, where there is an attempt to combine the additional Devenyi '549 reference. The discussion of the Ground 1 rejection is incorporated here.

The first requirement of MPEP 2142 is that "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings". Applicant incorporates the prior argument regarding the attempt to

- 18 -

combine Pan and Schwanz. As to Devenyi '549, the explanation of the rejection asserts that the reason for combining the teachings of Devenyi '549 with those of Pan is "to form a hard, smooth thread comprising a wear-resistant running surface for engagement with a bearing nut member" (Final Office Action, page 4, lines 9-13), an argument based upon an advantage drawn from the Abstract of Devenyi '549. While this is certainly an advantage for the device of Devenyi '549, it is not a reason to modify the structure taught by Pan with the structure taught by Devenyi '549. For this argument to have any weight, it would have to be shown that Pan does not have leadscrew threads that are hard and smooth. Pan never complains that the machined threads of its leadscrew 24 fail to provide a hard, smooth surface. Conventional leadscrew shafts, like those of Pan, are produced to provide a hard, smooth thread surface. There is no reason to substitute the approach of Devenyi '549 for that of Pan. If the Courts and the MPEP had meant that the requirement for an objective basis could be met simply by listing an unrelated advantage disclosed by one of the references, they would have said so. Instead they mandated that there be an objective basis to combine the teachings, and the arguments presented in the explanation of the rejection do not meet this requirement.

This attempted combination of teachings does not meet the first requirement of MPEP 2142.

The second requirement of MPEP 2142 is that there must be a reasonable expectation of success the teachings of the references. MPEP 2143.01 provides that, in constructing a sec. 103 rejection, the proposed modification cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference. MPEP 2143.02 requires that, in combining the teachings of two references, there must be a reasonable expectation of success in the combination. Both of these mandates would be violated in the proposed approach of combining the teachings of Pan, Schwanz and Devenyi '549. Pan and Devenyi '549 deal with leadscrew assemblies, wherein the leadscrew is rotationally driven. Schwanz does not deal with a leadscrew assembly, and in Schwanz the drive wire 1 is not rotationally driven. Schwanz states at col. 2, lines 37-38, "In order to assure that the wire 1 is actually

- 19 -

displaced longitudinally, and not simply rotated..." and goes on to describe the structure that assures that the wire 1 is not rotated. The structures of Pan, Schwanz, and Devenyi '549 are mechanically incompatible. The attempt to modify the approach of Pan and Devenyi '549 with that of Schwanz, as suggested in the explanation of the rejection, would render the approach of Pan and Devenyi '549 inoperable, would change the principle of operation, and would not be expected to be operable in the manner discussed by Pan.

This attempted combination of teachings does not meet the second requirement of MPEP 2142.

The third requirement of MPEP 2142 is that the prior art reference (or references when properly combined) must teach or suggest all the claim limitations.

Claim 1 recites:

a leadscrew operable to rotate about a rotational axis to linearly drive a driven structure...; and

a hollow drive nut housing affixed to the driven structure and comprising

a nut bore..., and

a spring pin affixed to the drive nut housing and spanning across the nut bore to engage the leadscrew thread."

The spring clip 7 taught by Schwanz is not affixed to anything comparable to the recited drive nut housing. In fact the spring clip 7 of Schwanz is not part of the driven structure, which is the drive wire 1, and instead is part of the driving motor 5 and its hollow shaft 6, as clearly depicted in Figure 1 and discussed at col. 2, line 39.

Independent claim 12 recites in part:

"a hollow drive nut housing comprising

a nut bore..., and

a spring pin affixed to the drive nut housing and spanning

- 20 -

across the nut bore to engage the leadscrew thread...,
a linear slide mechanism to which the drive nut housing is affixed
so that the drive nut housing does not rotate."

Schwanz teaches that the structure analogized to the drive nut housing, the hollow shaft 6, is affixed to the motor, not to any linear slide mechanism (col. 2, lines 8-9). Thus, none of the three applied references teaches a leadscrew assembly having a drive nut housing with a spring pin, wherein the drive nut housing is affixed to the linear slide mechanism. In addition to the fact that Schwanz does not teach a leadscrew, Schwanz places the structure relied upon in forming the rejection at the motor end, not at any linear slide mechanism end (and in fact Schwanz has no linear slide mechanism). The structure of the proposed combination of teachings seeks to move the mechanism of Schwanz to a location completely different from that taught by Schwanz, and to apply it in a completely different context from that taught by Schwanz, a rotating leadscrew.

Claim 1 further recites in part:

"a leadscrew operable to rotate about a rotational
axis...comprising
an elongated shaft..., and
a leadscrew thread comprising a thread wire helically
wrapped in spaced-apart turns upon the lateral surface and affixed to the
elongated shaft".

Claim 12 has a similar recitation.

Neither reference has any such teaching of a leadscrew that rotates about a rotational axis, where the leadscrew thread is a helically wrapped thread wire. Pan discloses a leadscrew but not a helically wrapped thread wire. Schwanz does not disclose any threaded structure like a leadscrew that rotates about a rotational axis.

This attempted combination of teachings does not meet the third requirement of

- 21 -

MPEP 2142.

The application is in condition for allowance, and requests such allowance.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "William Schubert", is written over a horizontal line.

William Schubert

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